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ABSTRACT

This paper reports on two aspects of dyadic communication skills: verbal imitation, and response to questions and commands, as they relate to the development of semantic functions in three English-speaking children. The children, aged 16, 21 and 22 months, were unobtrusively videotaped during weekly free play sessions with their mothers. The videotapes were completely transcribed and then coded along three dimensions: action context, communicative interaction, and semantic function. The situations reported on here (imitation, and response to questions and commands) are categories on the communicative interaction dimension. It is hypothesized that verbal imitation performs an important communicative function, so the first question concerned the kinds of words children imitated. This was answered in three ways: (1) with respect to the word's position in the adult sentence, (2) with respect to the part of speech, and (3) with respect to the semantic function. A second means by which children indicate communicative skills is by appropriately answering questions and commands. The three children in this study displayed evidence that they were beginning to process questions and commands as a special kind of verbal input, particularly in the development of answers to yes/no questions and naming questions. (AMH)

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DYADIC INTERACTION IN SINGLE-WORD SPEECH

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Since the primary function of language is communication, it stands to reason that among the first things the language learning child must discover are the rules and guidelines which govern the give and take of conversation in speaker-hearer dyads. Even before language production begins, children display evidence through comprehension that they can understand when demands are made of them, and sometimes can make an appropriate, nonverbal, response to such requests. By the time the child is producing a large number of single word utterances, she or he may be displaying quite sophisticated understanding of when the utterances made by others require responses, and what kinds of verbal responses are particularly appropriate to the situation. Most likely, there are differences in how well tuned individual children are to these communicative aspects of language. Some children may be structurally advanced, displaying large productive vocabularies and using a wide variety of semantic functions, while others may be relatively unsophisticated structurally and yet be quite attuned to communicative requirements (Rodgon, 1976; Rodgon, Jankowski, and Alenskas, 1977). This paper is a report on two aspects of dyadic communication skills: verbal imitation, and response to questions and commands, as these relate to the development of semantic functions in three English-speaking children.

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Subjects and data collection procedures: Subjects included Brian, a white boy first observed at age 16 months, Kim, a white girl first observed at age twenty-one months, and Sherry, a black girl first observed at age twenty-two months. All had been producing single words for at least one month when observation began. All three children were unobtrusively videotaped during weekly free play sessions with their mothers in a University playroom equipped with a standard set of toys. Brian's father was present for portions of sessions. Data included here are five sessions for Kim, eleven for Brian, and six for Sherry.

Videotapes of all sessions were completely transcribed and then coded along three dimensions: action context, communicative interaction, and semantic function. The situations of interest here, imitation and response to questions and commands were categories on the communicative interaction dimensions.[1] Details pertaining to the scoring of these categories will be presented as necessary throughout the body of this report.

Imitation: A central hypothesis of this paper is that verbal imitation, the repetition by a child of all or part of an utterance which has just been produced by an adult or another child, performs an important communicative function. Some researchers have eliminated imitated utterances from their analyses of dyadic communication. To this author, such a procedure places too high a value on spontaniety in evaluating communicative function. While I do not claim that spontaneous and imitated utterances

perform the same functions for the child, I suggest that eliminating imitated utterances presumes that these utterances perform no noteworthy semantic function, or are not tied to ongoing action context. Such a position seems extreme. The claim here is that in order to understand the full range of the single word child's comprehensive and productive capabilities it is essential to explore the range of semantic functions which are expressed in imitative utterances, and to compare these to the functions ordinarily expressed in spontaneous production. I have previously argued (Rodgon, 1976; Rodgon and Kurdek, 1977) that imitation is a mechanism well suited to the task of vocabulary building. In this paper, I will examine evidence that words which are imitated tend to be those which are high in referential content, attempting to provide support for this hypothesis. In addition, I suggest here that imitation is communicatively important during the single word phase since it indicates awareness of the dyadic situation. The child who imitates is demonstrating her/his awareness that communication occurs in pairs, that the roles of speaker and listener alternate, and that what the child speaker says is closely related to what the previous speaker has said. On the other hand, the child's imitation does not add any new information which benefits the listener, and in this sense, does not carry the conversation forward. For these reasons, it seems likely that imitation would be especially useful in the early phases of acquisition when the child is both first becoming adjusted to the dyadic verbal situation, and also is primarily concerned with vocabulary building. Imitation should be less useful later when attention switches to developing conversational topics, and to producing increasingly complex grammatical structures.

In this paper imitation is defined as the child's repetition of any word or words from the previous adult utterance or group of utterances. For example, the child's utterance of "horsie" would have been scored an imitation if mother had said either "Look at the horsie." or "Look at the horsie. He has brown eyes." Using this criterion, it was relatively easy to identify imitated utterances. Phonological form was not required to precisely match the adult's, and often did not. Child utterances which were repetitions of the child's own previous utterance were scored not as imitations, but as "child sequence repetitions." Their relation to imitations will be discussed later in this paper. Cases in which the child first repeated the adult, and then repeated himself/herself were double-scored.

The first question asked was: What kinds of words were imitated? This question will be answered in three ways: with respect to the word's position in the adult sentence from which the imitation was drawn, with respect to part of speech, and with respect to semantic function. The analysis in terms of semantic function is based upon a modified system of case relations developed by Greenfield, Smith, and Laufer (1972).

The percentage of imitations of words which occupied various positions in the model sentence are given in Table 1. These children imitated words which appeared toward the end of a sentence. This suggests that the types of words imitated are related to the types of models provided. The data presented in Table 2 add support for this notion. A simple breakdown by part of speech indicates that nouns, verbs, and adjectives, which are likely to occur towards the end of adult sentences, are most likely to be imitated.

Table 1
Percentages of imitated words which appeared in various positions[a] in the model utterance

Subject	Last	Last*	Last-1	Last-2
Brian	77.87%	83.18%	5.08%	2.65%
Kim	48.48%	63.64%	11.52%	9.09%
Sherry	70.34%	73.79%	10.34%	11.04%

[a]Last is the last word in the adult sentence; last-1 is the second to the last word, etc. The column Last* includes words which are the last in a sentence, but may have been immediately followed by additional adult input, e.g. "dog" in "This is a dog. See?"

It would be incorrect based on these data to suggest that children routinely apply a rule "imitate the last word in a sentence." If this were true, then one would expect much higher over all percentages of imitation than are actually obtained. Only 7.7% of Brian's 8.8% of Kim's and 14.3% of Sherry's total single word production is imitated. The differences in the numerical tendency among the three children to imitate the very last word heard would also argue against this simplification. I suggest, rather, that children use imitation to add to their vocabularies, and that words with highly referential content generally appear towards the ends of adult sentences. While these data are consistent with this hypothesis, it should be considered tentative until a more detailed analysis of the structure of the adult models provided for each child and the extent and nature of the child's imitative productions can be made.

Table 2
Percentages of words imitated by part of speech for Brian, Sherry, and Kim

Subject	N utt[a]	Nouns	Verbs	Adjec.	Adverbs	Other
Brian	113	61.06%	15.04%	6.19%	13.27%	3.53%
Kim	165	61.22%	16.97%	10.31%	7.27%	4.24%
Sherry	145	40.00%	13.11%	24.14%	9.65%	15.86%

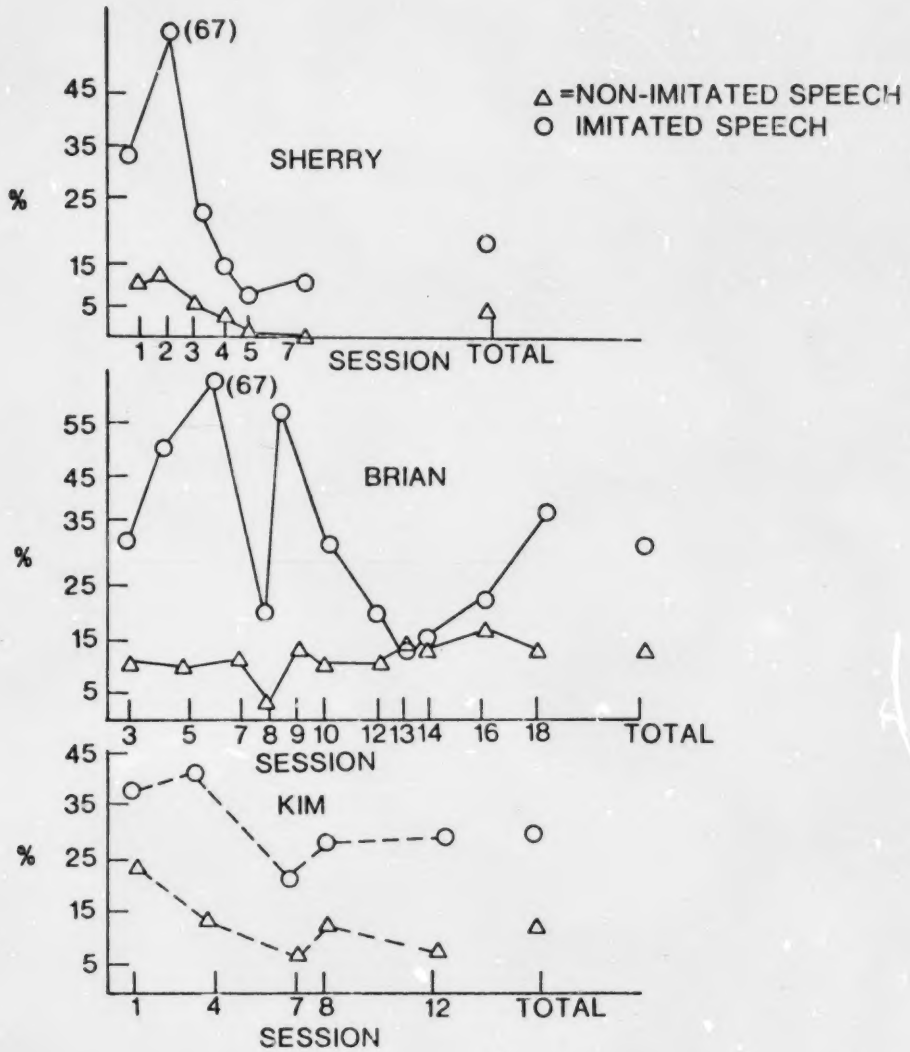
[a]N utt equals the total number of imitated utterances.

The present analysis of imitated words in terms of semantic function supports the claim that imitation is useful for the selective purpose of vocabulary building. It is not the absolute percentage of imitated words used for a purpose which is of interest, but the difference in the percentages of usage in the spontaneous and imitated conditions. Using the criterion that a function occurred "more often" in imitated than spontaneous usage by at least 5%, only one function met this criterion for all three children. This was naming, and as Figure 1 illustrates, the differences were generally much larger than 5%. These results are consistent with the hypothesis, since the naming function here represents the simple paring of the name of an object with the real object or a real picture of the object. Not all nouns which appear toward the ends of sentences are imitated, then, but primarily those which aid in pairing symbol with real world representation, and thus in increasing vocabulary. There were two other functional categories which appeared more frequently in the imitated than spontaneous situation for two of three subjects. These were the inanimate object of direct action, as the imitation of "ball" after mother said "The dog is chasing the ball." and location, as the imitation of "house" after "The children are in their house." Since both of these situations are highly representational, and closely related to simple naming, their relatively frequent imitation is understandable. As for idiosyncracies of individual subjects, Kim imitated action words, also highly representational, and Brian imitated the names of objects which he wanted to play with.

There are a number of other interesting questions regarding the role of imitation which can be raised using these data. Due to lack of space, these cannot be discussed in detail here. Two of the more important questions concern the relation between imitated utterances and the action context of early speech, and the relation between imitation and self-repetition. Analyses to date indicate that these children are as likely, and in some cases even more likely, to be performing an overt action while they are imitating an adult utterance, as while they spontaneously produce a word. This makes it very unlikely that imitation is somehow a lower-order verbal mechanism which performs entirely different functions than spontaneous speech. Rather, imitation seems to be most adaptive for the specific function of vocabulary building. In terms of its symbolic capabilities, or its "genuineness" as a truly verbal mechanism, however, it appears at least in this essential way to be related to the same variables involving overt action as does spontaneous speech. Of course, the use of imitation is not an isolated phenomenon, but occurs in combination with other communicative devices. Self-repetition and imitation, for example, often occur in tandem, as for example when the child repeats a request which has been unfulfilled, and mother continues to repeat the child's request, often because she does not understand it. The implications are clear. If one is truly to understand the role which imitation plays in language acquisition, one cannot ignore the action context in which

imitated utterances occur, or the semantic functions of the words which are imitated. At the same time, one must move beyond the immediate two item speaker listener exchange, and place the item which appears to be imitated in the context of the larger ongoing conversation.

Figure 1
The Semantic Category of Naming as a Percentage of Each Child's Imitated and Non-imitated Single-word Speech



Response to questions and commands: A second means by which children indicate communicative skills is by appropriately answering questions and commands. A child can respond non-verbally through actions and gestures, indicating understanding. It is only when the child begins to respond verbally, however, that the interdependence of semantic and communicative factors becomes apparent. Questions and commands not only require certain context in their answers, but certain form. Of all the semantic relations available to a child, he/she must choose those that both provide the information called for, and that do so in a way compatible with the form of the question. In addition, in answering appropriately the child is carrying the conversation forward by providing the information required. This contrasts with the imitation situation where the child indicates awareness of what has been said, but no conversational progress is made.

The main issue here is whether the child's responses are tailored to the question or command. Awareness can be demonstrated by comparing the range of semantic functions with which the child appropriately and inappropriately follows adult questions. An inappropriate "response" can occur for a variety of reasons. For example, the child's utterance may not really be a "response." Rather than an interactive conversation, an observer may have the impression that child and adult are talking about two different topics. In such cases, there should be no limitations on the number of semantic relations expressed by the child. The variety of relations used following questions ought to be similar to the over-all pattern of that child's productive ability. When the child is truly responding to a question, only a limited range of semantic relations will be appropriate. The use of a limited set of semantic relations as appropriate answers compared to a larger and more diverse set which inappropriately follow questions, then, would provide evidence for the child's developing communicative skill. The issue goes beyond mere recognition of an appropriate type of answer. In terms of communication, inappropriate answers can also occur if the child chooses to ignore the question. This, however, is not very effective in terms of progress in conversation. The child who communicates efficiently must deal both with the interdependence of form and function in questions and answers, and with the communicative ground rule that questions require answers; they should not be ignored.

All three children in this study displayed evidence that they were begining to process questions and commands as a special kind of verbal input. In all three cases, the development of answers to yes/no and naming questions, were especially striking. In all three cases, parents asked many more questions was called for naming than for yes/no responses. Yet in all three cases, the majority of naming questions were followed by appropriate responses, and the majority of yes/no questions were followed by inappropriate responses. This might suggest that yes/no questions were less salient to these children, or that their form was not processed. This is not the case.

All three children used the words, "yes," "no," and their variations exclusively as appropriate responses to yes/no questions. Clearly, they understood the relation between yes/no questions, and yes/no answers. Why, then, were so many parental yes/no questions followed by inappropriate responses? There are two reasonable possibilities. One is that they knew when not to say yes or no before they knew when to say yes or no. The other is that the children were choosing to ignore these questions particularly because their context was not appealing. The technique might be interpersonally quite sophisticated, while in terms of dyadic communication, it appears ineffective. With children whose productive capacity is so limited, there is no easy way to determine whether the child did not understand the question, or was deliberately attempting to redirect the conversation. The suggestion must for now remain an intriguing possibility.

Further evidence for these children's awareness that questions must be answered in certain ways comes from a comparison of their appropriate and inappropriate "answers" to all questions and commands directed to them. Sherry's case is very clear. She uses only two relations, yes/no and questions of her own as appropriate responses to either questions or commands. Two different relations occur inappropriately following questions, and eight different relations inappropriately follow commands.

For both Brian and Kim, longitudinal analysis revealed an interesting development. Brian used yes/no and naming as appropriate following questions. There were five categories appropriately following commands, and five inappropriately following commands, again with an apparent overlap for naming. This was misleading, however. Naming represented 15% of Brian's total single-word speed; i.e., he relied heavily on semantic naming regardless of the communicative situation. A session by session breakdown of naming following questions indicated that while the absolute number of appropriate naming responses remained constant, the number of other categories used appropriately increased during sessions #10 and #13, and thus the percentage of naming decreased. In other words, when Brian was less advanced, he used naming in many communicative contexts. With development, he began to recognize that many questions and commands require responses other than names. Once these semantic relations were part of his productive repertoire, his appropriate responses to questions began to indicate awareness of communicative demands.

A very similar development occured for Kim. Over-all percentages indicated three categories: yes/no, naming, and inanimate object of direct action appropriately following questions, and naming and inanimate object inappropriately following. Again, longitudinal analysis revealed a decrease over time in the percentage of naming as an appropriate response.

Of course, in understanding dyadic interaction, there are many other facets of turn-taking, topic switch, rephrasing, and elaborating which

which were beyond the scope of this paper. It is hoped, however, that by concentrating on two aspects of the give and take between parent and child, some preliminary insights were provided which will be tested and elaborated by other researchers. Even when the child provides but a single word response, conversations are being carried forward. The joint consideration of semantic and communicative factors is essential, since for the child the development of semantic and communicative skills are inextricable.

Footnotes

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[1]For a complete description of data collection and scoring procedures, please see Rodgon, et. al., 1977.

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